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INDEXING SYSTEM FOR SOVIET FOUNDRY MACHINERY WITH LIST OF MODELS

Indexing System

Foundry machinery (exclusive of hoist and transport machinery and other auxiliary equipment) is indexed according to a system which was first used at the Moscow Krasnaya Presnya Plant in 1944. Under this system, each machine is given a three-digit number. The first digit indicates the general group to which the machine belongs, the second digit refers to the types within these groups, while the third digit refers to sizes within types, and to variations of types.

A breakdown of the system is given in the following table. Where third-column digits are listed without explanatory data, they indicate simply numbers given to sizes and variations of types.

First Digits (group designation)	Second Digits (type designation)	Third Digits (sizes and variations)
(1) Sand-conditioning machines	(1) Roller-plow	1, 2, 3, 4
	(2) Belt-screen	1
	(3) Paddle-blade (aerator)	1, 2, 3
	(4) Dasher-disk (disintegrator)	1
	(5) Ball-mill (pulverizer)	1
	(6) Magnetic separator	1

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First Digits (group designation)	Second Digits (type designation)	Third Digits (sizes and variations)
	(7) Riddle	1, 2, 3
(2) Molding machines	(1) Hand-operated	1, 2, with roll-over plate 3, 4, with lift pins 5, 6, with draw frame 7, 8, 9, jolt-action
	(2) Squeeze	1, 2, 3, 4
	(3) Pneumatic, jolt, with roll-over plate	1, 2, 3, 4, 5, 6
	(4) Pneumatic, jolt	1, 2, 3, 4, with lift pins 5, 6, 7, 8, with draw frame
	(5) Pneumatic, jolt-squeeze, for drags	1, 2, with removal table 3, 4, with flask roll-over
	(6) Pneumatic, jolt-squeeze, for copes	1, 2, with lift pins 5, 6, with draw frame
	(7) Pneumatic, jolt-squeeze, for flaskless molding	1, 2, 3
	(8) Core	1, 2, drive 3, 4, jolt 5, 6, sandblast 7, 8, squeeze
	(9) Sand slingers	1, 2, 3, 4, 5
(3) Cleaning machines	(1) Drum	1, 2, simple cleaning 5, 6, with sandblast 7, 8, with shotblast
	(2) Sandblast	1, 2, 3, 4, 5, 6
(4) Shakeout machines	(1) Core	1, 2, 3
	(2) Grate	1, 2, 3
	(3) Traverse	1, 2, 3
(5) Special machines	(1) Die-casting	1, 2, 3
	(2) Permanent-mold casting	1, 2, 3
	(3) Centrifugal casting	1, 2

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Application of the indexing system may be illustrated by analyzing the designation of the 242 machine. The first digit, 2, indicates that it is a molding machine. The second digit says that it is pneumatic-powered and has jolt action. The third digit shows that it is equipped with lift pins. Thus, we see that the 242 is a pneumatic, jolt-action molding machine with lift-pin draw.

List of Foundry Machinery

/The following list comprises a brief description of each machine appearing in the catalogue together with its specifications. The introduction to the catalogue states that these machines are already in production, or slated for production in USSR plants. The only plants listed in connection with their production are the Moscow Krasnaya Presnya Plant and the Usman' Plant. Where these plants have been mentioned in connection with the machines, this fact has been recorded on the list below with any notes concerning the development of the machines. The Usman' Plant is mentioned only as producing a single unit of a machine.

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Internal evidence indicates that where both the old designation (staraya marka) and the new one are given, there has actually been a modification; therefore, in such cases, the old designation is referred to as the old model.

It will be observed that many of the machines are listed only according to the old designating system. Reference to the number indexing system permits new machines to be checked against the description and specifications of these machines. The new 287 machine, for example, which was mentioned in 00-W-9845, will be found to correspond to the S-1 machine listed in the catalogue, and may be assumed to be a modification of it.

For nearly every machine, a foreign model which it replaces (zamenyaet) is given. Practically all of these machines are American models, and in at least a few cases the USSR model not only performs the functions of the American machine, but is closely patterned after it./

Sand-Conditioning Machines

The roller-plow sand mixers 111 (old model, ZM-2a), 112 (old model, ZM-3), and 113 condition both mold and core sand. The 111 and 113 machines replace the Simpson No 2; the 112 replaces the Simpson No 3.

Specifications	111	112	113
Normal pan load (cu m)	0.2-0.3	0.4-0.6	0.4-0.5
Productivity, mechanized loading and unloading (m/hr)	2-3	4-8	3-5
Electric motors			
Type	MA-143-2/6	MK-21/4, form p	MA-144-2/6
Power (kw)	11	28	20.5
Revolutions per minute	960	1,450	975
Voltage	380/220	380/220	380/220
Speed of vertical rotor (rpm)	24	20	25.6

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Specifications	111	112	113
Speed of horizontal rotor (rpm)	96	80	95
Weight of machines (kg)	3,100	4,600	3,800
Weight of motor, reduction unit (kg)	600	1,150	800

The 132 aerator (old model, ZM-6) is designed to further condition sand which has been mixed in the roller-plow, or other mixers. The sand inside the mixing chamber is agitated by rotating paddles, while the chamber itself is subjected to a jolting action. Powered by an electric motor, the machine replaces the Link Belt Aerator.

Specifications

Weight (kg)	900
Productivity (cu m/hr)	40
Speed of drive belt (rpm)	750
No of jolts of chamber per minute	10
Required horsepower	8

The 141 disintegrator (old model, ZM-8) serves the same purpose as the 132 aerator, and replaces the disintegrator of the Baden Plant (Badenskiy Zavod). The sand is mixed by dashers affixed to disks rotating in opposite directions within a mixing chamber.

Specifications

Weight (kg)	380
Productivity (cu m/hr)	5
Power, electric motor (kw)	5
Speed of outer rotor (rpm)	320
Speed of inner rotor (rpm)	350

The 121 portable mixer (old model, ZM-10) is designed for breaking up filling sand. An endless belt, fitted with combs, passes the sand under a plate, separating the coarser particles, then throws it against a screen.

The 121 has been produced at the Krasnaya Presnya Plant since 1945. It is 70 kilograms lighter than the older ZM-10. It replaces the Royer mixer.

Specifications

Weight (kg)	280
Productivity (cu m/hr)	Up to 8
Electric motor	
Type	ADO 30/6
Power (kw)	1.4
Revolutions per minute	960
Voltage	220/360

Specifications

Dimensions of belt (mm)	
Width	300
Thickness	5-6
Length	2,000
No of combs affixed to belt	140
Speed of belt drums (rpm)	550

The 171 portable sand mixer (old model, ZM-18) sifts filling sand through a screen which is moved rapidly to and fro by a camshaft running off an electric motor. Modernized at the Krasnaya Presnya Plant in 1945, the machine differs from the older ZM-14 and ZM-18 machines in that it is lighter, and has a receiving trough.

Specifications

Weight (kg)	100
Productivity (cu m/hr)	Up to 3
Electric motor	
Type	ADO-21/6
Power (kw)	0.5
Revolutions per minute	960
Voltage	220/380
Speed of camshaft (rpm)	200
To-and-fro movements of sifting screen (movements/mm)	400

The 151 ball-mill machine (old model, ZM-13) pulverizes dry materials used in molding, such as coal, coke, graphite, and clay. The material is first pulverized by the action of the metal balls being thrown against it inside the drum, after which it passes through holes in the drum, and thence through a screen. The machine is equipped with a pulley, and runs off a power-transmission belt.

Specifications

Weight of machine, without balls (kg)	80
Weight of balls (kg)	50
Diameter of balls (in)	$1\frac{1}{2}$-$3\frac{1}{2}$
Screen size (openings/sq cm)	500-600
Productivity, pulverizing coal (kg/hr)	75
Size of coal lumps (mm)	Up to 60-65
Initial load (lit)	30-40
Speed of drum (rpm)	40-45
Required horsepower	2.5-3.5

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Molding Machines

Of the four hand-operated molding machines listed below, the RF-1 and RF-2 hold the flask on pins as the pattern is drawn out from beneath, while the RF-5 and RF-6 machines support the flask on a draw frame.

Specifications	RF-1	RF-2	RF-5	RF-6
Depth of draw (mm)	100	100	100	100
Dimensions of table (mm)	435 x 435	535 x 435	No table	No table
Inside dimensions of draw frame (mm)	No frame	No frame	410 x 310	500 x 400
Lengthwise distance between pins, lift or frame-support (mm)	360	460	510	600
Inside dimensions of flask (mm)				
Length	400	500	410	500
Width	400	400	310	400
Height	130	130	130	130

There are eight other hand-operated pattern-draw machines, numbered accordingly. They differ in dimensions, but are similar in construction and operation.

Specifications	1	2	3	4	5	6	7	8
Dimensions (mm)								
Length	500	500	550	600	650	700	700	650
Width	350	400	350	450	350	350	450	550
Height	600	600	600	600	600	600	600	600
Maximum depth of draw (mm)	150	150	150	150	150	150	150	150
Maximum dimensions of flask (mm)								
Length	350	350	400	450	500	550	550	600
Width	250	300	250	300	250	250	300	400

Maximum productivity, with mechanized sand supply and flask transportation (flasks/hr) 200-300 for all numbers of the machine

Another hand-molding machine, having no designation, handles both cope and drag of the same mold on opposite sides of its roll-over table. After tamping, the table is raised, drawing the pattern from the drag, then rolled over so that the pattern may be drawn from the cope.

Specifications	
Distance of draw (mm)	300
Dimensions of flasks (mm)	
Length	250-600
Width	250-400
Height	Up to 150

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The VF-2 pneumatic machine utilizes both jolt and squeeze action to turn out complete molds, a match plate being inserted between cope and drag. Sectional or removable flasks are used, the completed mold being taken off the machine without the flask (flaskless molding). The machine replaces the Osborn 275-J.

Specifications

Weight (kg)	850
Working air pressure (atm)	5-6
Jolt height (mm)	60-80
Maximum lift force of squeeze mechanism at 6 atmospheres (tons)	3
Distances from table to squeeze plate (mm)	280, 330, 380, 430
Expenditure of air per mold (cu m)	0.2
Vibrator	
Type	N-2
Diameter of plunger (mm)	25
Maximum external dimensions of molds (mm)	400 x 300 x 25
Productivity (molds/hr)	30-40

The Krasnaya Presnya Plant puts out three pneumatic machines: the 222, 201, and 271, which makes molds for small parts.

The 222 machine (old model, TsKB-131) is a squeeze-action machine for molding in low flasks, which it removes from the pattern by lift pins. It replaces Arcade models 81 and 10.

The 261 (old model, TsKB-111) has both jolt and squeeze action, and handles flasks 200 millimeters high, removing them from the pattern by lift pins. It was modernized in 1946 and replaces Adams models 10 and 12.

The 271 (old model, TsKB-121) has jolt and squeeze action, and can turn out complete molds, using a match plate between cope and drag. Sectional or removable flasks are used, and the finished mold is removed by hand. It replaces the Osborn 275-J.

Both the 222 and 271 are patterned after the basic design of the 261, and 90-95 percent of their parts are interchangeable with those of the 261.

Specifications	222	261	271
Weight (kg)	850	1,000	800
Inside dimensions of flasks (mm)	500 x 400 x 150	500 x 400 x 200	400 x 300 x 100/150
Productivity, foundry fully mechanized (flasks/hr)	60-70	50-60	30-40
Travel of lift pins (mm)	150	150	No pins

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Specifications	222	261	271
Working air pressure (atm)	5-6	5-6	5-6
Height of jolt (mm)	No jolt	30	30
No of jolts per minute	No jolt	60-80	60-80
Maximum lift force of jolt mechanism at 6 atmospheres pressure (kg)	No jolt	150	150
Maximum lift force of squeeze mechanism at 6 atmospheres pressure (tons)	6.25	6.25	6.25
Maximum travel of squeeze piston (mm)	170	170	170
Expenditure of air per mold (cu m)	0.3	0.4	0.35
Vibrators			
Type	N-2	N-2	N-2
Diameter of plunger (mm)	25	25	25
Number of vibrators	2	2	1

The PF-3 pneumatic squeeze-action machine is designed for rapid handling of low flasks, both copes and drags. The machine has two flask tables flanking the squeeze table. The pattern plate, with filled flask on top of it, is placed on one of the flask tables, and is swung over the squeeze table. The squeeze table exerts pressure through cylinders in the flask table to the pattern plate, forcing it up into the flask and against the sand, compressing it against the squeeze head. While one flask is being squeezed, another one can be prepared and filled on the other table, ready to be swung into place when the first flask is completed. At the conclusion of the squeeze, the pattern is lowered on the lower part of the flask table, leaving the flask on a frame around the table's edge.

Specifications	
Weight (kg)	3,200
Inside dimensions of flasks (mm)	720 x 540 x 70-120
Productivity, with mechanized sand supply and flask transportation	
Flasks per hour	100-120
Molds per hour	50-60
Maximum distance from surface of pattern plate to bottom of flask, before plate is forced up into it (mm)	70

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Specifications

Working air pressure (atm)	6
Maximum lift force of squeeze mechanism at 6 atmospheres (tons)	12
Maximum travel of squeeze piston (mm)	70
Expenditure of air per mold (cu m)	0.15
Angle through which flask tables turn, depending on location of sand hoppers (deg)	120-130
Vibrators	
Type	N-62
Diameter of plunger (mm)	50
No of vibrators	2

The 266 pneumatic machine (old model, VF-17) turns out copes, using both jolt and squeeze action. A lift frame raises the completed mold from the pattern. The 266 replaces the Nichols 16.

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Specifications

Weight (kg)	2,250
Maximum inside dimensions of flasks (mm)	650 x 425 x 300
Dimensions of draw-frame window (mm)	820 x 446
Heights of draw (mm)	
First	305
Second	235
Third	165
Fourth	85
Productivity under complete foundry mechanization (flasks/hr)	60-80
Working air pressure (atm)	5-6
Maximum lift force of jolt mechanism at 6 atmospheres (kg)	270
Maximum travel of squeeze piston (mm)	340
Maximum lift force of squeeze mechanism at 6 atmospheres (tons)	7
Expenditure of air per mold (cu m)	0.7
Vibrator	
Type	N-29
Diameter of plunger (mm)	42

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The 265 pneumatic machine was developed at the Krasnaya Presnya Plant in 1946. Designed for molding copes, it has both jolt and squeeze action and lifts the flask away from the pattern on a draw frame. The squeeze action begins automatically when the squeeze head is swung into place. The 265 machine replaces the Nichols 24.

Specifications

Weight (kg)	3,600
Inside dimensions of flask (mm)	
Length	800-1,250
Width	Up to 700
Height	300-150
Height of draw (mm)	
For flasks 800 mm long	300
For flasks 1,250 mm long	150
Productivity, foundry fully mechanized (flasks/hr)	60-80
Working air pressure (atm)	5-6
Maximum lift force of jolt mechanism at 6 atmospheres (kg)	600
Maximum lift force of squeeze mechanism at 6 atmospheres (tons)	16
Expenditure of air per mold (cu m)	0.6
Vibrator	
Type	N-29
Diameter of plunger (mm)	42

The VF-14 and VF-11 pneumatic machines turn out copes, exerting both jolt and squeeze action and lifting away the flask by a draw frame. They are of similar design, differing only in dimensions.

The VF-14 replaces the Osborn 702 and the VF-11 replaces the Osborn 703.

Specifications	VF-14	VF-11
Weight (kg)	2,100	2,850
Inside dimensions of flasks (mm)	600 x 390 x 200	850 x 470 x 250
Dimensions of draw-frame window (mm)	865 x 405	1,016 x 486
Height of draw (mm)	160	210
Productivity, foundry fully mechanized (flasks/hr)	60-80	60-80
Working air pressure (atm)	5-6	5-6
Maximum lift force of jolt mechanism at 6 atmospheres (kg)	450	900
Maximum travel of squeeze piston (mm)	235	281

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Specifications	VF-14	VF-11
Maximum lift force of squeeze mechanism at 6 atmospheres (tons)	7	9.5
Expenditure of air per flask (cu m)	1.2	1.59
Type	N-29	N-29
Diameter of plunger (mm)	42	42
No of vibrators	2	2

The 242 pneumatic machine replaces the Osborn 559 and 560 machines. Designed to turn out copes, it has jolt action and removes the flask from the pattern on lift pins.

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Specifications	
Weight (kg)	1,850
Inside dimensions of flasks (mm)	
Length	660-1,300
Width	390-710
Height	Up to 300
Height of draw (mm)	250
Productivity, foundry fully mechanized (flasks/hr)	35-40
Working air pressure (atm)	5-6
Maximum lift force of jolt mechanism at 6 atmospheres (kg)	700
Expenditure of air per mold (cu m)	About 0.6
Vibrators	
Type	N-29
Diameter of plunger (mm)	42
No of vibrators	2

The VF-7 (new model, 243) is a jolt-action pneumatic machine with lift-pin removal of flasks. Designed to turn out copes, it replaces the Osborn 405-C.

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Specifications	
Weight (kg)	7,425
Dimensions of table (mm)	1,460 x 1,060
Height of draw (mm)	460
Distances between lift pins (mm)	1,500 x 660

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Specifications

Productivity, foundry fully mechanized (flasks/hr)	35-40
Working air pressure (atm)	5-6
Maximum lift force of jolt mechanism at 6 atmospheres (tons)	2
Expenditure of air per mold (cu m)	1.2
Vibrators	
Type	N-29
Diameter of plunger (mm)	42
No of vibrators	2

The VF-9 pneumatic jolt-squeeze machine turns out drags, usually working with the 266 machine, which makes the copes for the same mold.

During jolting, the pattern plate is affixed to the roll-over plate, which rides up and down with the jolt table, its journals traveling in grooves in the two supporting columns on the sides of the machine. The flask is covered and rolled over before squeezing. Upon completion of the squeeze, the flask is lowered from the pattern on the table.

The VF-9 was modernized at the Krasnaya Presnya Plant in 1945. It is planned to further modify the machine in the future, making automatic the jolt and squeeze operations, the rotation of the scraper, and the turning on of the vibrators and roll-over plate. After these modifications, the VF-9 will be known as the 253.

The machine replaces the Osborn 332.

Specifications

Weight (kg)	2,000
Maximum inside dimensions of flasks (mm)	1,020 x 650 x 250
Maximum distance of draw (mm)	250
Productivity, foundry fully mechanized (flasks/hr)	60
Working air pressure (atm)	5-6
Maximum lift force of jolt mechanism at 6 atmospheres (kg)	340
Maximum lift force of squeeze piston at 6 atmospheres (tons)	8
Height of jolt (mm)	80
No of jolts per minute	120-180
Expenditure of air per mold (cu m)	1
Vibrator	
Type	N-60
Diameter of plunger (mm)	32

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The 254 pneumatic jolt-squeeze machine (old model, VF-10) turns out drags, usually working with the 265 machine, which makes the copes for the same mold. The 254 is equipped with a roll-over plate, and in basic design and operation, is similar to the VF-9, described above.

The 254 replaces the Osborn 333.

Specifications

Weight (kg)	2,800
Maximum inside flask dimensions (mm)	1,340 x 810 x 300
Maximum distance of draw (mm)	290
Productivity, foundry fully mechanized (flasks/hr)	60
Working air pressure (atm)	5.5-6
Maximum lift force of jolt mechanism at 6 atmospheres (kg)	500
Maximum lift force of squeeze mechanism at 6 atmospheres (tons)	9
Expenditure of air per mold (cu m)	1.5
Vibrators	
Type	N-29
Diameter of plunger (mm)	42
No of vibrators	2

The 231 and 232 pneumatic machines are modernized versions of the VF-20 and VF-13 machines. The machines, similar except for their dimensions and the shape of the roll-over table, consist essentially of a pair of connected units, one for jolting the flask, the other for removing the pattern.

After jolting is completed, a pair of arms lift the roll-over table and flask from the jolt table, turn it over, and set it on the raised receiving platform of the second unit. This platform is lowered, the pattern being drawn out as the flask rests on two sets of rollers on either side of the receiving plate. The flask may then be slid off the rollers onto a conveyer.

The machines are designed for making drags and large cores and usually work with the 242 machine, which turns out copes.

The 231 machine replaces the Herman /or German, a firm name; probably the Herman Pneumatic Machine Company of Pittsburgh/ 750 machine, and the 232 replaces the Herman 1500 machine.

Specifications	231	232
Weight (kg)	1,900	3,900
Inside dimensions of flasks (mm)		
Length	900 or 1,200	1,000 or 1,500
Width	500	660 or 600
Height	275	450 or 200
Productivity, foundry fully mechanized (flasks/hr)	35-40	30-35

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Specifications	231	232
Working air pressure (atm)	6	6
Maximum lift force of jolt mechanism at 6 atmospheres (kg)	340	585
Expenditure of air per mold (cu m)	0.4	0.8
Hydraulic system		
Amount of oil used in chamber of turn-over mechanism (lit)	30	95
Amount of oil used in draw mechanism (receiving table) chamber (lit)	30	60
Vibrators		
Type	N-62	N-62
Diameter of plunger (mm)	50	50
No of vibrators	2	2

The 233 pneumatic machine, a modernized version of the VF-12, is a jolt-action, roll-over, pattern-draw aggregate similar in design and operation to the 231 and 232 machines described above. The 233 turns out drags, and can be used with the VF-7 machine, which makes copes for the same mold.

The 233 replaces the Herman 3000.

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Specifications	
Weight (kg)	5,600
Inside dimensions of flasks (mm)	
Length	1,440 or 2,200
Width	1,100 or 600
Height	400
Productivity, foundry fully mechanized (flasks/hr)	25-30
Working air pressure (atm)	6
Maximum lift force of jolt mechanism at 6 atmospheres (kg)	1,350
Expenditure of air per mold (cu m)	2
Hydraulic system	
Amount of oil in reservoir for roll-over mechanism (lit)	190
Amount of oil in reservoir for draw mechanism (receiving table) (lit)	80
Vibrators	
Type	N-62
Diameter of plunger (mm)	50
No of vibrators	3

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The 292 sand slinger (old model, P-21) is used in making molds of medium size. Mounted on a concrete base, it replaces the Beardsley-Piper machine.

Specifications

Weight (kg)	1,430
Productivity, working continuously (cu m/hr)	12-15
Working radius (mm)	3,195
Speed of impeller head (rpm)	1,460
Conveyer-belt speed (m/sec)	2
Motor driving riddle	
Type	AD 21/4
Power (kw)	1
Revolutions per minute	1,460
Voltage	380
Motor driving impeller head and belt conveyer	
Type	ADF 52/4
Power (kw)	10
Revolutions per minute	1,460
Voltage	380

The P-3 sand slinger is a rail-mounted portable aggregate which feeds the sand from a large bunker. The machine replaces the Motiv [transliterated from the Russian].

Specifications

Weight (tons)	10
Productivity, working continuously (cu m/hr)	12-15
Working radius (mm)	3,215
Volume of bunker (cu m)	8
Traversing speed (m/min)	20
Speed of impeller head (rpm)	1,460
Speed of feeder belt (m/sec)	912
Elevator motor	
Type	AD 41/4
Power (kw)	4.3
Revolutions per minute	1,500
Voltage	380
Riddle motor	
Type	AD 21/4
Power (kw)	1
Revolutions per minute	1,500
Voltage	380

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Specifications

Impeller-head motor	
Type	AD 31/6
Power (kw)	10
Revolutions per minute	1,500
Voltage	380
Belt-feeder motor	
Type	UT
Power (kw)	2.85
Revolutions per minute	750
Voltage	380
Traversing motor	
Type	AD 31/6
Power (kw)	1.2
Revolutions per minute	1,000
Voltage	380

Core-Making Machines

The S-1 bench-mounted core-making machine turns out cylindrical and polyhedral cores. The machine mixes the sand as it is fed in, and compresses it with a reciprocating piston. Drive is either by hand, or by an electric motor.

The S-1 replaces the Perfect model.

Specifications

Diameter of cylindrical cores (mm)	19, 26, 32, 40, 50
Productivity, drive wheel rotating at 45 revolutions per minute (one-meter lengths of core/hr)	10-12
Speed of drive wheel (rpm)	
Hand-rotated	40-45
Motor-driven	100
Power of motor used (kw)	0.3
Travel of piston (mm)	55

The S-3 and S-4 hand-operated portable core machines are similar in design and operation. The core box is secured to the roll-over table, tamped down, turned over, and the core drawn away from the box on a drying plate.

The S-3 replaces the Osborn 40; the S-4 replaces the Osborn 42.

Specifications	S-3	S-4
Weight (kg)	300	300
Maximum width of core box (mm)	450	550
Maximum weight of core box, including sand and drying plate (kg)	20	30
Maximum distance of draw (mm)	200	200

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Specifications	S-3	S-4
Distance from surface of roll-over table to arms of receiving table (mm)		
Minimum	70	60
Maximum	220	210
Vibrator		
Type	N-2	N-2
Diameter of plunger (mm)	25	25

The S-6 core machine, designed for series-producing cores of complex configuration, forces the core mixture into the box by sandblasting action. The machine is pneumatically powered, except for the device which mixes the core sand before it goes into the sand chamber, which device is run by an electric motor. During the blasting operation the core box is secured tightly against the sand chamber.

The S-6 replaces the Osborn 93.

Specifications	
Weight (kg)	1,920
Maximum inside dimensions of core box (mm)	900 x 450 x 300
Volume of reservoir (lit)	50
Dimensions of table (mm)	900 x 300
Expenditure of air per core	6 times volume of core
Working air pressure (atm)	6-7

The S-7 pneumatic sandblast core machine, like the S-6 machine, is designed for series production of cores of complex configuration. In design and operation, it is similar to the S-6.

The S-7 replaces the Demmler machine /probably produced by William Demmler and Brothers of Kewanee, Illinois/.

Specifications	
Weight (kg)	1,150
Maximum inside dimensions of core box (mm)	390 x 325 x 490
Dimensions of table (mm)	357 x 325
Volume of reservoir (lit)	15
Working air pressure (atm)	6-7

Die-Casting Machines

The 511 machine (old model LD-6) and the LD-7 machine series produce alloyed die castings of copper, zinc, and aluminum. The machines, similar in design and function, are more properly aggregates, consisting of a casting machine, a pump for oil or emulsion, and an accumulator. A furnace for heating the metal must also be set up nearby.

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The pump runs the hydraulic power system for the casting machine. Thus powered, the casting machine closes the two halves of the mold, forces the molten metal into the mold by plunger, and ejects the finished casting. The accumulator, partially filled with gas, serves to maintain an even hydraulic pressure.

The 511 machine replaces the Pollak 600; the LD-7 replaces the Pollak 900. /May refer to machines from the William B. Polloch Company of Youngstown, Ohio. the 511 is a new machine put out by the Krasnaya Presnya Plant, as of 31 October 1950./

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Specifications	511	LD-7
Maximum weight of castings (kg)		
Of copper alloy and zinc alloy	2.1	3
Of light alloys	1.3	1.8
Pressure exerted on closed mold (tons)	55	120
Maximum surface of casting on plane of mold parting (sq cm)		
Of copper-alloy castings	100	200
Of light-alloy castings	200	400
Working pressure, hydraulic system (atm)	120	120
Expenditure of emulsion during complete work cycle (lit)	6	12
Dimensions of machine (mm)		
Length	2,100	2,900
Width	900	1,500
Height	2,405	2,700
Weight of machine (kg)	1,930	4,500
Type pump	Horizontal, reciprocating, three-cylinder	
Electric motor for pump		
Type	MKA-17/4	MKA-19/4
Power (kw)	10.5	18.4
Revolutions per minute	1,440	1,440
Voltage	220/380	220/380
Dimensions of pump (mm)		
Length	1,960	2,250
Width	875	1,070
Height	1,020	1,290
Weight of pump (kg)	807	1,100
Working pressure in accumulator (atm)	120	120
Volume of accumulator (lit)	150	300
Volume of gas subjected to 120 atmospheres pressure (lit)	75	150

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Specifications	511	LD-7
Gas used	Nitrogen	Nitrogen
Dimensions of accumulator (mm)		
Mounting	900 x 1,100	960 x 1,360
Height	2,570	2,570
Weight of accumulator (kg)	570	970

Shakeout Machines

The 0-9, 0-10, and 0-11 vibration traverses for shaking out flasks are similar in design and operation, differing only in size and capacity. They consist essentially of a beam, or crossarm, to each end of which is affixed a pneumatic vibrator with a hook on its lower end. The flasks are suspended from these hooks during the shakeout process.

Specifications	0-9	0-10	0-11
Weight (kg)	150	210	280
Maximum lifting capacity (tons)	1	2	3
Productivity (flasks/hr)	30-60	30-60	30-60
Diameter of vibrator plunger (mm)	75	100	125
Working air pressure (atm)	5-6	5-6	5-6

The new 421 twin-vibrator pneumatic shakeout grid, produced at the Krasnaya Presnya Plant, and the 0-12 and 0-13 grids are similar in operation and design. All three replace the Beardsley Piper machine.

Specifications	421	0-12	0-13
Weight (kg)	840	1,100	1,180
Maximum load capacity (tons)	1.5	2	3
Productivity, foundry fully mechanized (flasks/hr)	100-120	30-60	20-30
Dimensions of grid (mm)	1,400 x 1,200	2,500 x 1,000	3,500 x 1,250
Working air pressure (atm)	5-6	5-6	5-6
Diameter of vibrator plungers (mm)	125	125	150

The 0-15 and 411 (old model, 0-14) pneumatic machines are designed for shaking out cores from shaped castings. Similar in design and operation, the machines clamp the casting by its sides under the pressure of a squeeze piston. A vibrator piston, situated between the squeeze piston and the casting, then acts to shake out the sand.

The machines replace the Stonney /probably from the Stoney Foundry Engineering and Equipment Company of Cleveland, Ohio/.

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Specifications	0-15	411
Weight (kg)	900	840
Productivity (castings/hr)	up to 120	up to 120
Height of center of clamp head above floor (mm)	1,075	755
Height of center of clamp head above frame (mm)	210	615
Maximum distance between clamp heads (mm)	300	500
Travel of squeeze-plunger clamp head (mm)	150	250
Working air pressure (atm)	5-6	5-6
Maximum squeeze force exerted at 6 atmospheres (kg)	200	800
Expenditure of air under continuous operation (cu m/min)	4	4
Dimensions of machine (mm)		
Length	1,400	2,400
Width	600	570
Height	1,230	1,200
Diameter of cylinders (mm)		
Squeeze cylinder	75	140
Vibrator cylinder	60	125

Cleaning Machines

The TsKB-29 electric-powered dustless tumbled barrel is designed for cleaning small- and medium-size castings.

Specifications	
Inside diameter of drum (mm)	775
Working length of drum (mm)	1,540
Volume of drum (cu m)	0.735
Weight of drum without motor (kg)	2,700
Weight of cover of drum (kg)	220
Weight of casting load handled, exclusive of stars (kg)	1,500
Speed of drum (rpm)	29.8
Time required to clean one load of castings, including loading and unloading time (hr)	1.5-2
Productivity (tons/shift)	5-7
Amount of air expended in dust removal (cu m/min)	22
Power of electric motor (kw)	6.8
Revolutions per minute	730

The O-3 electric-powered sandblast tumbling barrel with dust exhauster replaces the New Haven model.

Specifications

Weight (kg)	3,750
Inside dimensions of drum (mm)	
Diameter	900
Length	1,125
Load norm (% of drum volume)	60
Sand load (lit)	50
Cleaning time for one load (min)	20-40
Diameter of sand nozzles (mm)	9
Diameter of air nozzles (mm)	3
Working air pressure (atm)	2-3
Electric motor	
Type	AZ 32/1000
Power (kw)	1.4
Revolutions per minute	960
Voltage	380/220
Speed of drum (rpm)	2
Productivity of exhaust unit (cu m/min)	120
Dimensions of cyclone filter (mm)	
Diameter	1,200
Length	1,000

The O-4 sandblasting machine consists of a sand elevator and sifter, loading hopper, sandblast unit, and rotating table. It is used for cleaning castings, parts which have been heat-treated, and parts which have been galvanized.

The parts to be sandblasted are placed on the table. A protective curtain runs across its diameter, separating the half subjected to the sandblasts from the half which projects out in front of the machine. The parts to be treated are placed on the open part of the table.

The O-4 replaces the model made at the Baden Plant.

Specifications

Weight (kg)	3,700
Diameter of table (mm)	2,300
Height of castings cleaned (mm)	
Average	350
Maximum	380
Permissible table load (kg)	1,200

Specifications

Productivity, for gray-iron castings (kg/hr)	1,000-1,500
Expenditure of air (cu m/min)	6-8
Expenditure of sand (kg/ton of casting)	100
Working air pressure (atm)	1.5-2
Diameter of nozzles (mm)	6-8
Speed of table (rpm)	0.44-0.88
Power of electric motor driving table, elevator, and mixer (kw)	2.2

A sandblasting chamber, having no designation, is designed to permit a worker, protected by a curtain, to play the sandblasting hose on the castings. The parts revolve on a turntable, a large one being used for large castings, and one of smaller diameter for smaller castings. The machine is especially suited for treating parts of complex configuration.

The chamber's sandblasting unit, an LPA-1, was made at the Usman' Plant.

Specifications

Diameter of main table (mm)	2,300
Diameter of secondary table (mm)	1,000
Permissible load on each halt of table (kg)	500
Diameter of nozzle (mm)	8-10
Working air pressure (atm)	2
Productivity of chamber, cleaning gray-iron castings (tons/hr)	8-10
Expenditure of air at 2 atmospheres (cu m/min)	2
Expenditure of sand at 2 atmospheres (kg/min)	8

The TsKB-034 aggregate cleans small and medium-sized castings and forgings by both tumbling and shot-blasting. A slat conveyer moving around the inner walls of the drum effects the tumbling action, while a turboimpeller shoots a stream of metal shot against the parts from above. In addition to the drum and impellers units, the aggregate includes an elevator for picking up and feeding the shot, and a skip hoist for loading the castings into the drum.

The TsKB-034 replaces the Villibreytor /transliterated from the Russian/ model.

Specifications

Standard drum load and volume capacity of skip loader (cu m)	0.45
Load of castings cleaned in one work cycle (kg)	400-1,000

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Specifications

Average productivity (tons/shift)	15-20
Maximum load capacity of skip loader (kg)	750
Time required to clean castings of gray iron (min)	12-15
Impeller wheel	
Revolutions per minute	2,250
Diameter of wheel (mm)	500
Density of shot stream, depending on various settings (kg/min)	11, 12, 33, 45, 56, 67, 90
Speed of slat conveyer (m/min)	5.25
Diameter of shots (mm)	
For iron castings	0.5-0.7
For steel castings and forgings	0.7-1
Expenditure of shot per ton of castings (kg)	1-3
Weight of component units of aggregate (kg)	
Drum	7,410
Shot elevator	680
Skip loader	1,280
Shot impeller	580
Current utilized	Three-phase, alternating, at 380/220 volts

Electric motors	Type	Power (kw)	RPM
For slat conveyer	AD-42/6	3.5	965
For shot impeller	MA-143-1/4	11.4	1,445
For shot elevator	AD-31/4	2.2	1,445
For skip loader	AD-32/4	3.2	1,440

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